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ABSTRACT

Noting that past local media coverage of environmental topics, including those dealing with radiation topics, has often been superficial, a study assessed press coverage of the radon problem in the Lehigh Valley region of Pennsylvania during the first nine months of 1985. The study explored whether local media coverage of radon--a colorless, odorless, radioactive gas, linked to lung cancer and found in high quantities in areas of eastern Pennsylvania--would reflect superficial coverage, and, if it did, the reasons for the trend. The three-phase study included measuring the quantity and level of coverage; interviewing reporters, editors, and decision makers in the Lehigh Valley; and conducting a preliminary public opinion poll that relied on available subjects in shopping malls. Results indicated that although there was a great deal of local coverage alerting the public to the problem, the coverage was in fact superficial. Three factors contributing to the superficiality included (1) the event orientation of the articles, (2) the limited number of scientific news sources cited, and (3) local reporters' and editors' lack of scientific training or background. (DF)

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REPORTING ON RADON: THE ROLE OF LOCAL NEWSPAPERS

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ABSTRACT

REPORTING ON RADON: THE ROLE OF LOCAL NEWSPAPERS

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This study assessed press coverage of the radon problem in the Lehigh Valley region of Pennsylvania during the first nine months of 1985. Radon is a colorless, odorless, radioactive gas that has been linked to lung cancer and is found in high quantities in areas of eastern Pennsylvania.

In the past, local media coverage of environmental issues, particularly those dealing with radiation topics, frequently has been superficial. The researchers sought to determine whether local media coverage of radon would reflect this trend and, if so, the reasons for this type of coverage.

To do this, they measured the quantity and level of coverage, interviewed reporters, editors and decision makers in the Lehigh Valley, and conducted a preliminary public opinion poll that relied on available subjects in shopping malls.

On the basis of this three-phase study, they concluded that, although there was a great deal of local coverage, which alerted the public to the problem, the coverage indeed was superficial. This was because: (1) the articles were event-oriented; (2) a limited number of scientific news sources were cited, and (3) local reporters and editors had little or no scientific training or background.

REPORTING ON RADON: THE ROLE OF LOCAL NEWSPAPERS

This is an analysis of the local media coverage of an environmental problem affecting residents of the Lehigh Valley area of eastern Pennsylvania -- the existence of indoor radon pollution. Problems with radon, a colorless, odorless, radioactive gas linked to lung cancer, have been known by the federal government for some years.

Underground uranium deposits give off radon as they decay. Radon is "not chemically bound or attached to other materials, and can, therefore, move easily through small spaces, such as those between particles of soil and rock" (1). This gas decays further into other radionuclides, called "radon daughters," which attach themselves to solid bodies, such as airborne dust particles or living tissue. If inhaled by a person, these "daughters" can cause tissue damage and lead to lung cancer (2).

In 1960, "the Public Health Service first documented an increased respiratory cancer risk among United States uranium miners" (3). A 1971 study by the U.S. Department of Health, Education and Welfare stated:

> The epidemic of lung cancer now in progress among American miners could readily have been -- and indeed was -- predicted on the basis of past experience in other parts of the world. Less predictable was the extent of the scientific, legal and political controversy that the American experience would engender (4).

That statement was made when the only people thought to be at risk were uranium miners. A much larger controversy, one that would involve the general public and the mass media, was yet to come.

According to Arthur A. Socolow of the Pennsylvania Geological Survey, "The presence of radon emanating from crystalline rocks and ground water in New England, as well as other parts of the country, had been recognized and studied on a low key level for decades" (5). Scientists at the University of Maine, for example, started studies of radon concentrations in local water supplies in 1972 (6).

In 1978, the Pennsylvania Geological Survey initiated a field survey for potentially exploitable uranium resources in eastern Pennsylvania in an area known as the Reading Prong. This area stretches from Reading to Easton, Pennsylvania, and through New Jersey into New York. It was "long known to have small, local concentrations of uranium minerals and the results of a regional aerial radioactivity survey in the mid-1970s by the U.S. Department of Energy confirmed the Reading Prong area as an appropriate target to search for potentially minable uranium occurrences," according to Socolow (7).

The interest in minable uranium was prevalent, according to Socolow, "because the time was still pre-Three Mile Island (TMI) and the country still felt that it had to find new raw material to fuel the then-growing number of nuclear-powered generating plants" (8). However, since this survey occurred before the

accident at TMI raised the consciousness of many people about radiation dangers, no one appeared concerned about the potential health effects of these uranium deposits. Although Pennsylvania's Department of Environmental Resources (DER) was alerted in the late 1970s about potential radon-connected health concerns, it did not follow up with studies because, according to a staff member, the TMI accident in March 1979 took up all of its staff time and efforts for a number of years.

The radon issue came to the media's and the public's attention in Pennsylvania in December 1984, when Stanley Watras, a construction engineer at the Limerick Nuclear Power Generating Plant, set off radiation alarms when he arrived for work one morning. Since Watras had not had contact at the plant with any radioactive material, attention was focused on his home in Boyertown, which is 15 miles east of the city of Reading. Tests showed that radon gas levels were more than 2,700 picocuries per liter (13.6 working levels), which is many times higher than the recommended radon limit for uranium miners. (The currently acceptable level for radon exposure is .02 working levels.) Many people think that the Watras readings constitute the highest known levels of radon in any house in the world (9).

At first, DER said this was an isolated incident and that it did not consider radon a danger to the general population. However, a crash program to test other homes in the Boyertown area and later selectively throughout the Reading Prong pointed out the large scope of the problem.

High radon concentrations in Reading Prong homes have been attributed by some researchers not only to uranium, but also to the energy conservation campaigns of the 1970s, which led to better insulation of many homes, keeping warm air but also radon gas inside. R.J. Budnitz of the Lawrence Berkeley Laboratory at the University of California at Berkeley warned about the consequences of an air-tight home in a 1978 article, six years before radon became a public issue in Pennsylvania (10). However, more recently, other scientists have found that many homes without extra insulation have high radon concentrations as well (11).

Whether energy conservation programs contributed to the radon problem was only one of many debates that ensued during 1985. In Pennsylvania, political debates over how a massive testing and correction program could be financed raged throughout the spring and summer. Finally, in October, a state-funded testing program was initiated for residents of the Reading Prong. By this time, the media were deeply involved in the radon story.

This study examines the extent of local press coverage given to the emerging radon problem from January to September 1985, to determine what role the newspapers played in this issue as well as the problems they encountered in reporting it.

Even though radon is a naturally occurring indoor pollution problem, it is still subject to some of the problems associated with other types of environmental reporting. In a 1983 article, Sharon M. Friedman, professor of journalism at Lehigh University, stressed:

> Mass media coverage of environmental issues -- including problems at nuclear power plants -- is a complicated affair, full of controversy and constraints imposed by the complexity of the information to be covered and by journalistic traditions and media economic conditions (12).

This problem is compounded at smaller newspapers, which lack the resources to "employ specialized reporters who have enough educational background and experience in a given area to handle complex technical subjects," Friedman said (13).

General assignment reporters, when reporting on scientific or technical issues, encounter a number of problems. According to Robert Cowen, science editor for the Christian Science Monitor and a former president of the National Association of Science Writers, such reporters plunge "into an environment where understanding a scientific or technological development more or less correctly in a loose, qualitative way just isn't good enough" (14).

Methods for reporting general news also frequently do not work well with complex scientific issues. In a 1963 article on the impact of science reporting, Edward J. Robinson pointed out that communicating concepts or ideas is quite distinct from reporting about tangible objects or products. He said:

> This implicit assumption is too often made that telling people about science is much the same thing as telling them about new model cars or clothes. It may well be that the communication techniques in one instance may have to be quite different than in the other (15).

Since radon is a radiation problem, another factor affecting coverage is fear. Theodore Gross, provost of the Capitol Campus of Pennsylvania State University near Harrisburg, talked about

radiation-created fear during the accident at TMI. He explained that because radiation from TMI was "invisible" to the public, it created "a sense of uncertainty and fright on the part of the people that may (have gone) beyond the reality of the accident itself" (16).

Providing enough news to inform readers, yet not scare them is a difficult task for reporters and editors. Yet such information is vital. According to Harrison Schmitt, a former scientist-astronaut and U.S. senator concerned about scientific affairs, "The press has an obligation to inform the public on issues of risk, so that they may understand what information should be sought and what policies should be implemented" (17).

Just how well the press in the Lehigh Valley did inform readers about the risks and concerns involved with the radon issue is the question this research pursued. Through evaluating the quantity and quality of the coverage as well as the constraints encountered by the newspapers involved, the researchers sought to determine whether this local story would be treated in a superficial or in-depth manner. By questioning opinion leaders and conducting a public opinion poll, they also sought to determine what the public had learned from the newspapers' coverage.

Methodology

This study originated as part of a class project to assess press coverage of the radon issue by conducting a three-phase evaluation (18). The first phase focused on analyzing five

newspapers' coverage of radon from January through September 1985. The second phase involved interviewing local editors, reporters and decision makers for their perspectives on local radon coverage. A preliminary public opinion poll that relied on available subjects in shopping malls was conducted as the third phase of the study.

The newspapers analyzed were three local newspapers, the Morning Call in Allentown, a medium-sized, regional newspaper covering nine counties; the Express in Easton, a small newspaper with editions in Easton and Phillipsburg, New Jersey, and the Globe-Times in Bethlehem, a small newspaper with editions in Allentown and Bethlehem. Two large metropolitan newspapers were evaluated for comparison, the Philadelphia Inquirer and the New York Times. The researchers initially analyzed radon coverage based on the quantity of articles, length, headlines and the major news sources used.

To refine this analysis, they later determined the origin of each article and whether it had been written by a staff or wire service reporter. News sources were categorized and subdivided into scientific or official sources.

Each article was evaluated to see whether it was "self-generated" or "event-oriented." An article was labeled "self-generated" if it appeared that the reporter took the initiative to investigate the story. If the reporter was writing in response to an occurrence or announcement, the article was labeled "event-oriented." Each article also was characterized as news, feature or editorial.

Headlines were evaluated to determine whether they would alarm readers unnecessarily by counting whether they included one or more of five terms that could be considered alarming.

Levels of scientific information in each article similarly were measured by counting the use of selected scientific terms or concepts associated with the radon issue.

In phase two, the researchers devised separate questionnaires for reporters and editors to assess their scientific backgrounds as well as problems encountered in radon coverage. (Interviews with the editor and reporter of the Philadelphia Inquirer could not be conducted because of a labor strike.) Another questionnaire sought opinions of decision makers on the coverage. Of the 25 interviews, 17 were done by telephone.

The third phase of the study consisted of a preliminary public opinion poll conducted in five local shopping malls on Sunday, November 24, 1985. People who passed by the interviewers during a four-hour period were asked to participate, but only home owners and home renters were asked the questionnaire because they would have a personal and economic interest in the effects of radon. In all, 156 people were interviewed. Only brief information on the public opinion poll is presented here, as it was preliminary in nature.

Results

Articles on radon from January 1 to September 30, 1985, were analyzed from three local newspapers, representing each of the major communities making up the Lehigh Valley region. This

coverage then was compared to the radon coverage found in two metropolitan newspapers. The two major metropolitan newspapers were selected because of their regional or national nature and because they were published in large cities near the Reading Prong and would be likely to cover radon stories occurring there.

To get a true understanding of the radon coverage provided, the researchers analyzed articles from a number of perspectives: (1) quantity of coverage including article length; (2) article origin and orientation; (3) headlines; (4) sources used, and (5) level of scientific information provided.

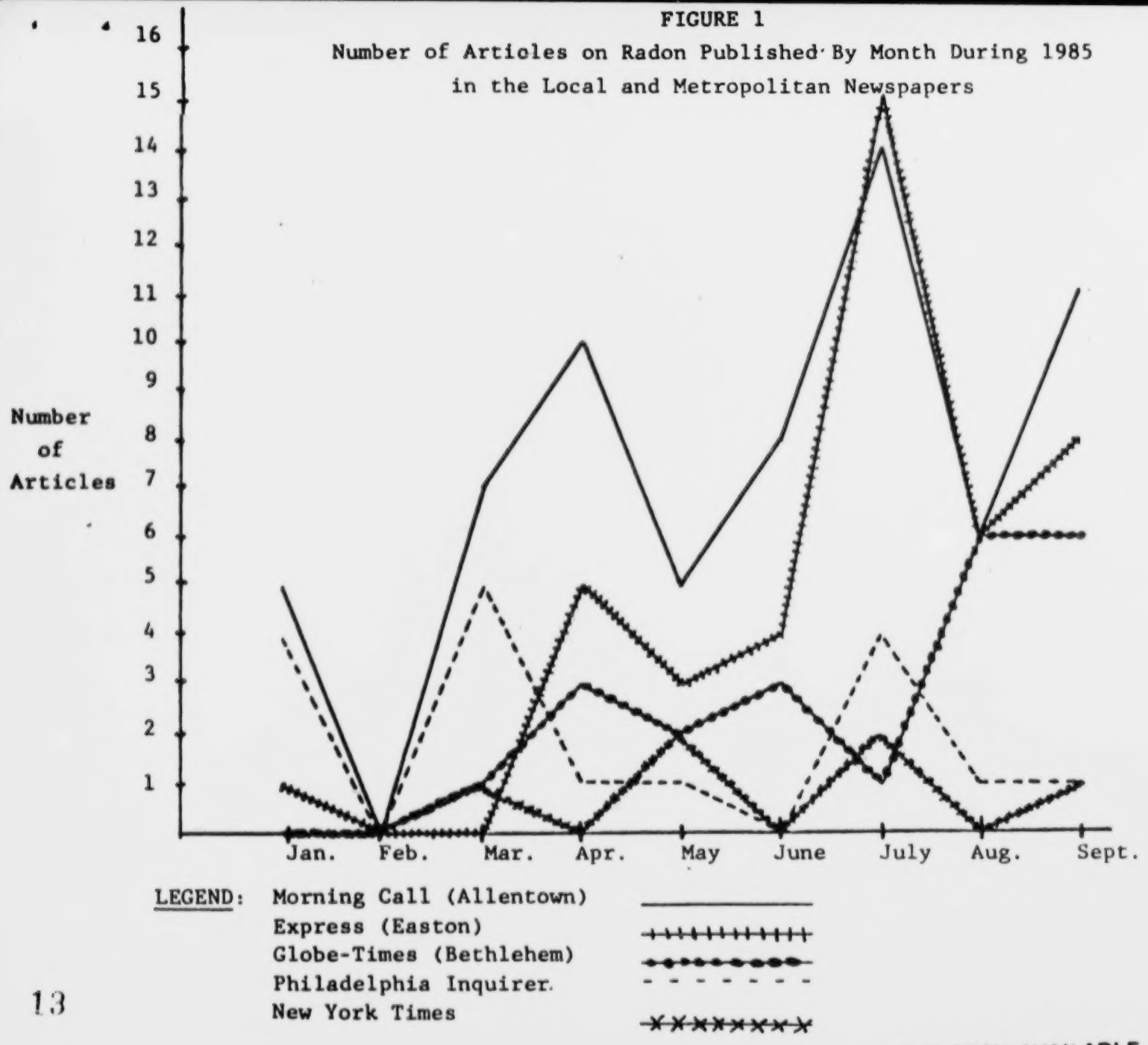
Quantity of Coverage and Article Length

During the nine-month period examined, 138 articles appeared in the three local newspapers. The Morning Call (Allentown) printed 66, the Express (Easton) had 42 and the Globe-Times (Bethlehem) produced 30 (see Figure 1). Since the Morning Call is the largest of these three, with the most reporters and financial resources, it was not surprising to find it had produced the most articles.

In contrast to the large number of articles found in the local newspapers, there were 17 articles in the Philadelphia Inquirer and 6 in the New York Times during the same time period. Although one would expect fewer articles in newspapers not directly affected by the radon problem, both do serve suburban areas heavily involved in the radon issue. Because of this readership, it was expected that these publications would produce a greater number of articles than found.

FIGURE 1

Number of Articles on Radon Published By Month During 1985
in the Local and Metropolitan Newspapers



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To evaluate article length, those with 10 or fewer paragraphs were considered "short," those with 11 and 20 paragraphs "medium," and articles with 21 paragraphs or more were classified as "long."

Of the local newspapers, the Express had the largest percentage of long stories, 45.2 percent, compared to 39.4 percent in the Morning Call and 3.3 percent in the Globe-Times. Of the articles in the Morning Call, 40.9 percent were medium in length, compared to 31 percent for the Express and 26.7 percent for the Globe-Times. The Globe-Times had the largest percentage of short stories, 70 percent, compared to 23.8 percent for the Express and 19.7 percent in the Morning Call.

Of the 17 stories in the Philadelphia Inquirer, 42 percent were short, 29 percent were medium and another 29 percent were long. The six articles in the New York Times divided evenly, with 50 percent medium and 50 percent long.

Article Origin and Orientation

To effectively measure the local coverage of the radon issue, one had to look at the number of articles each local newspaper originated rather than took from the wire services.

Of the 138 articles printed in the local newspapers, only 14 were from the Associated Press, United Press International or other syndicated services. Although this indicates much initiative on the newspapers' part, it should be noted that there are no wire service bureaus in the Lehigh Valley region, and the

newspapers may have been forced into this situation by lack of available wire service coverage.

Similar to the local coverage, the metropolitan newspapers made little use of the wire services. Only 2 of the 17 articles in the Philadelphia Inquirer were based on wire service stories, while the New York Times did not use the wire services at all.

Of the local three newspapers' 138 articles, approximately 93 percent were hard news rather than feature stories or editorials. Of the remaining 7 percent, 4 percent were editorials and 3 percent were features. Approximately 96 percent of all of the stories were event-oriented, meaning that the articles responded to some occurrence, such as a press conference or the announcement of test results, rather than being generated by a reporter who took the initiative to investigate a story.

Although the metropolitan newspapers had a majority of hard news stories, 53 percent in the Philadelphia Inquirer and 67 percent in the New York Times, they also had a fair number of feature stories, 29 percent in the Philadelphia Inquirer, 33 percent in the New York Times. Half of the New York Times' articles were generated by reporters, but less than one-quarter, 23.5 percent, of the Philadelphia Inquirer's articles were similarly generated.

While covering breaking news is understandably the job of newspapers, it also is their job to originate and develop stories on their own, particularly on complex issues with health implications for their readers. Obviously, this was not the case with radon and this is certainly one of the factors that

contributed to some of the lack of understanding found in readers that will be discussed later.

Headlines

Radon is an issue that has the potential for long-term, serious harm for citizens, both from a health and real estate perspective. It is a story that could be easily sensationalized to attract more readers by unduly alarming them.

To see whether any such attempts had been made in the coverage of the five newspapers, the researchers analyzed headlines to evaluate whether they were overly alarming or shocking in some way.

Five key words or phrases were used to determine if the headlines were alarming: "risk," "threat," "cancer," "radioactivity" and "health concern." One example of such a headline was found topping a January 20 article in the Morning Call: "Radioactive Radon Poses Health Fears."

However, this was an exception. Very few headlines were found to contain the five alarming words or phrases in the local newspapers. One reason for this was that some local editors were concerned about unnecessarily alarming citizens. For example, Glenn Kranzley, then news editor of the Globe-Times, said the policy of his paper was "Let's not scare people." In addition to headlines, an article's position in the newspaper, its position on a particular page and whether it should have a photograph were all watched closely at this newspaper to avoid worrying readers unnecessarily (19).

Article Source Use

The types of sources used by the newspapers were analyzed to evaluate who was providing information, the frequency of use of official government sources and whether scientific sources were being cited. Sources were designated as either scientists or officials, with the distinction between these two based on the title attributed to the source in the article. For example, Bruce Dallas, press secretary for DER, was an official source, while Dr. Richard Wilson, chairman of the Harvard University physics department, was a scientific source.

All three local newspapers used DER officials and local or state government officials a high percentage of the time. Of 264 sources cited by them, 46.6 percent fell into these categories. Officials from the Environmental Protection Agency (EPA) comprised 8 percent of the sources, while 10.6 percent were other federal government officials.

The local newspapers made very limited use of scientific sources. Only 22.3 percent of the sources cited were scientific in nature. Of a total of 59 scientific sources cited, DER scientists were referred to 22 percent of the time, while EPA scientists were rarely used, only 1.7 percent of the time. The Morning Call cited some federal government scientists, while the Express quoted independent scientists and physicians. The Globe-Times used very few scientific sources, and those cited were affiliated with local or state government. There were very few comments from industry spokesmen, and even fewer from local residents.

In the major metropolitan newspapers, DER officials were again the most frequent source of information. The Philadelpha Inquirer quoted an official from the Pennsylvania Governor's office as a source several times, while the New York Times used EPA officials occasionally.

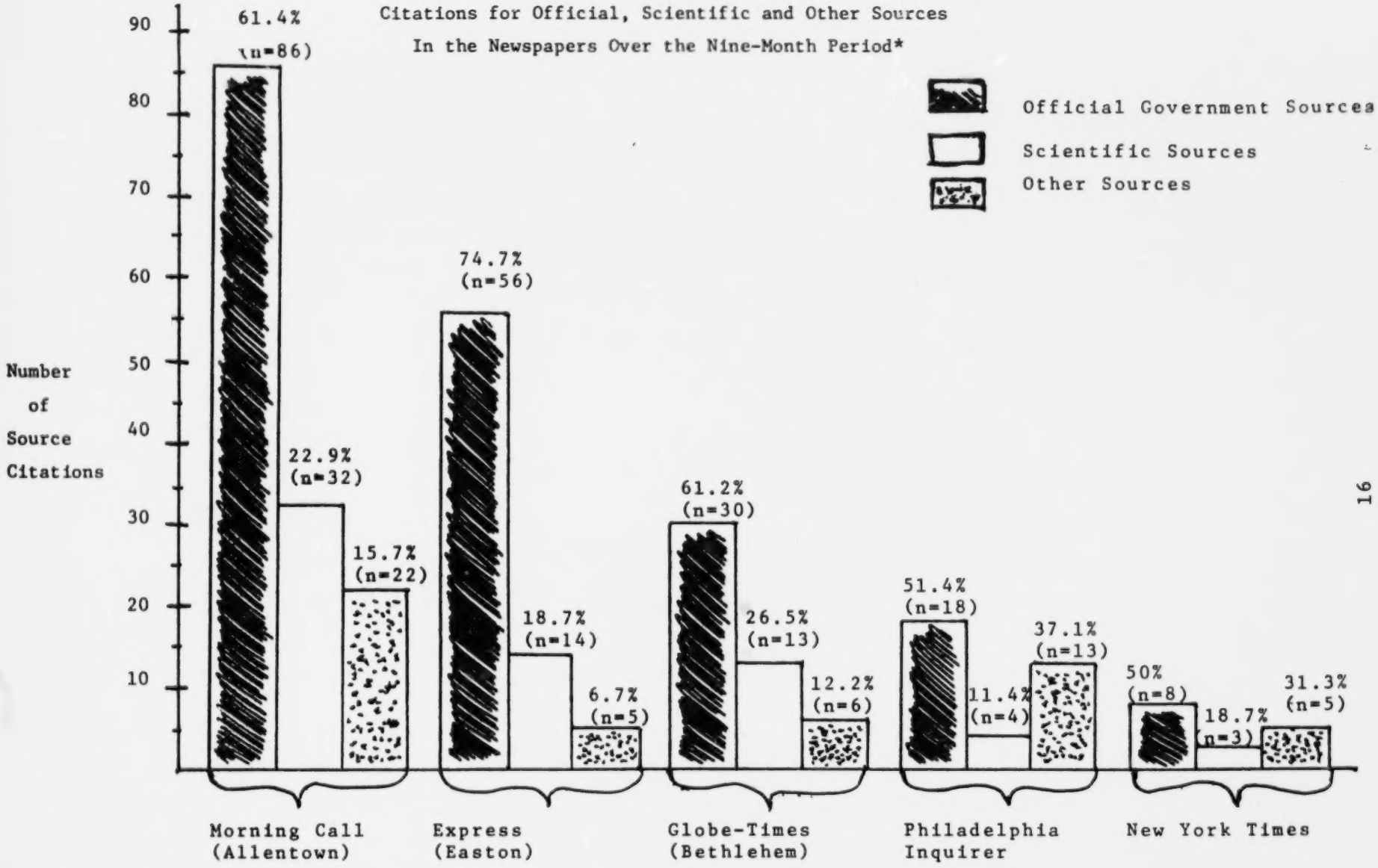
Both newspapers used independent scientists and physicians, rather than DER, EPA or government scientists as their scientific sources. Also, both newspapers used the general public's opinions in their articles. Of 35 cited sources in the Philadelphia Inquirer, 22.9 percent were members of the public, while the New York Times derived 18.7 percent of its 16 sources from the public.

Overall, DER officials were used by all the newspapers as their prime source of information. The local newspapers used federal, state and local government officials a great deal more than did the New York Times or the Philadelphia Inquirer. The metropolitan newspapers used members of the general public as a source more frequently. Both the local and metropolitan newspapers used officials and government sources more than they used scientific ones (see Figure 2). Such a level of dependence on government officials is not good. It could allow these officials to manipulate articles and get their own points of view across to the public, leaving the opinions of other important sources unheard.

FIGURE 2

Citations for Official, Scientific and Other Sources

In the Newspapers Over the Nine-Month Period*



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Level of Scientific Information

To analyze the level of scientific information, the researchers looked for four key concepts used to describe specific facts about radon. These four concepts were: the origin of radon, its direct health effects, the working levels or picocuries per liter of radon and the "radon daughters" or decay products that are produced as the gas decays.

These concepts were chosen because they represented all aspects of the issue such as (1) where it comes from, (2) what it does, (3) how it is measured and (4) which of its elements actually cause physical harm. It was noted if any of these concepts were just mentioned or explained in the article.

In the Morning Call's 66 articles, these concepts were mentioned 119 times, an average of 1.8 scientific references per article. The origin of radon comprised 38.7 percent of these references while 42.9 percent of these related to its direct health effects.

In the Express' 42 articles, there were 89 references, an average of 2.1 scientific references per article. Of these, 47.2 percent related to the origin of radon and another 40.4 percent to its direct health effects. The Globe-Times had 33 references in its 30 articles, or 1.1 scientific references per article. The origin of radon comprised 48.5 percent of these references while 48.5 percent dealt with its direct health effects.

From these data, the researchers determined that the origin of radon and its direct health effects were mentioned

consistently by all three newspapers during the nine-month period. The concepts of working levels or picocuries per liter and "radon daughters" were referred to only a small percentage of the time. These concepts made up only 18.5 percent of all the Morning Call's scientific references, 12.4 percent of those in the Express and only 3.0 percent of those in the Globe-Times. In fact, the Globe-Times never mentioned "radon daughters."

All of the figures indicate a low level of scientific information found in the articles in the three local newspapers. Although radon's origin and its direct health effects were repeatedly mentioned, they were not frequently explained. The more complex concepts of working levels or picocuries per liter and "radon daughters," which were critical for understanding doses and exposure dangers, were rarely mentioned, if at all.

Of the two metropolitan newspapers, the Philadelphia Inquirer paralleled the local newspapers while the New York Times provided somewhat more scientific information in its radon articles. In the Philadelphia Inquirer there were 23 references to the four scientific information concepts. This averaged out to 1.4 scientific references per article. Of these, 43.5 percent referred to the origin of radon, while another 43.5 percent dealt with its direct health effects. References to "radon daughters" and working levels or picocuries per liter were 13.0 percent.

The New York Times had 14 references in its 6 articles, which is 2.3 scientific references per article. The origin of radon was mentioned in 35.7 percent of all references while

direct health effects comprised 35.7 percent. "Radon daughters" and working levels or picocuries per liter were 28.6 percent.

As with the local newspapers, the origin of radon and its direct health effects were mentioned the most but detailed explanations of these concepts comprised only 8.3 percent of the references in the Philadelphia Inquirer, and 7.1 percent in the New York Times.

Despite the difference in the scientific sources utilized by the five newspapers, the level of scientific information in each was similar. In most of the articles, there appeared one or two almost identical descriptions of the origin of radon and its direct health effects. But rarely did a detailed explanation of these concepts follow the description.

Perspectives of Reporters, Editors and Decision Makers

After the five publications were analyzed, the researchers sought to uncover the factors contributing to this type of coverage. To get a range of perspectives on the press coverage of radon, the researchers interviewed editors and reporters from the three local newspapers and the New York Times. Staff members of the Philadelphia Inquirer were on strike. Local community leaders and decision makers also were interviewed. Media personnel were questioned about their level of scientific training, their evaluation of the quantity and level of coverage and their concerns over alarming readers.

Scientific Training

Since radon is a complex scientific issue, the amount of scientific training that reporters and editors had was seen as important. Of the four editors and six reporters interviewed, five said they had no training in science or engineering, while three had taken some basic biology courses in college. The remaining two interviewees had taken several college courses in the physical or life sciences.

Louise Phillipine, environmental reporter for the Express, was one of the reporters who said she had not taken any college courses in science or engineering. Yet, Phillipine estimated that 50 to 75 percent of her time was devoted to science or environmental writing.

In contrast, Kathi Moore, education reporter for the Globe-Times, had formal college training in science writing. But, she said she devoted very little time to writing about science or environmental topics. Yet, Moore had written a number of radon articles for the Globe-Times. Although she had taken a college biology course, the emphasis of Moore's scientific training was in the social sciences.

Philip Shabecoff, environmental reporter in the Washington bureau of the New York Times, had the most extensive scientific background of the media people interviewed. He attended the Bronx High School of Science and took some college chemistry and biology courses. It is interesting to note that, although Shabecoff had covered environmental issues for the past six years, he did not consider himself a science writer. "The theory

is," he remarked, "that a trained reporter should have the ability to write on any subject" (20).

All four of the editors interviewed agreed that a major criterion for assigning an environmental story was the reporter's availability rather than scientific training. David Jones, national editor in the New York office of the New York Times, said that the reporter's background would influence his choice of a reporter only slightly. He said that using specialized science writers was not his usual policy unless a detailed examination of the problem was required.

Level of Coverage

Editors and reporters interviewed felt that their respective newspapers covered the radon issue adequately. But some of the reporters felt that certain aspects of the issue had been given little or no coverage. For example, Randy Kraft, a reporter for the Morning Call, said there should be some stories on radon's health effects and the impact radon was having on the real estate market in the Lehigh Valley.

All of the reporters and editors interviewed agreed that their newspapers should serve both an alerting and educating function in relation to radon. They credited themselves for doing both to some extent because, they said, they were responsible for breaking the radon story and for supplying additional information to the public.

Alarming Citizens

All of the press representatives interviewed expressed some concern about unnecessarily alarming citizens. But, the Globe-Times' staff seemed to make a conscious effort to avoid unnecessary alarm. As noted earlier, then news editor Glenn Kranzley paid particular attention to the location of the article in the paper as well as its headline and graphic presentation. In addition, he said that the newspaper's initial low-key coverage was because "we were not convinced yet that it was a serious health threat." He did not want the coverage to add to any existing fears. "There's just something scary about it (radon) coming up out of the ground and getting you" (21).

Staff members at the Morning Call and the New York Times were not as concerned about alarming readers. According to Stephen Drachler, reporter for the Morning Call, it is more important to "tell it like it is" because readers need to be informed (22).

The local media's concern about unnecessarily alarming citizens is not typical, although this trend also was seen in the local newspapers located near TMI during and after the accident (23). In contrast, a three-year study of editors and reporters by Jay Winston of the Harvard School of Public Health revealed:

> Many reporters admitted to hyping their stories and distorting facts to gain prominent display. Editors acknowledged that they pressure writers for more color and bite than some stories warrant (24).

Perspectives of Decision Makers

To assess what others felt about local press coverage of radon, 15 decision makers were interviewed. This group included two city council presidents, two mayors, two state representatives, one Pennsylvania state senator, three DER officials, two representatives of the business sector, two citizens representing local environmental groups and one official from the Allentown Health Bureau.

All of the decision makers interviewed felt that the local radon coverage has been accurate and neither underplayed nor overplayed. But each of the interviewees had a concern about some aspect of the radon coverage. For example, while all of the decision makers agreed that citizens needed to be alerted and educated about radon, Peter Weinberg, a realtor with the Fishburn Agency in Bethlehem, said that citizens need to know "a lot less than is being ballyhooed" (25).

In contrast, Thomas Morgan, an official at the Allentown Health Bureau, felt that members of the public were not as concerned as they should be. Morgan said that the press coverage lacked information about the health effects of radon. He also said that the coverage failed to present radon as a national problem and concentrated on the local aspects of it.

Bruce Dallas, press secretary for DER, said that reporters had acquired adequate understanding of the radon issue. As a major source for articles about radon, Dallas said, "I must be clear. I can't make assumptions about people's knowledge level."

Asked if he had been misquoted in any articles about radon, Dallas replied, "not of any consequence." Dallas also was concerned about alarming readers when he spoke with reporters. "I'm very concerned with accuracy," he said (26).

Alfred Seiss, a director of Saucon Association for a Viable Environment (SAVE), said that the press coverage did not help people understand the difference between a picocurie and a working level. Both of these terms are used to describe measurements of radon levels but they are not interchangeable. Inconsistent terminology may confuse the average citizen, Seiss explained. "It needs to be explained matter-of-factly," he said (27).

These results show that the decision makers interviewed felt that there was an adequate amount of local radon coverage and that they were generally satisfied with it. However, several indicated weaknesses in the type of coverage provided.

Perspectives from the Public

From the analysis of the preliminary public opinion poll conducted at five Lehigh Valley shopping malls, the researchers found the newspapers had had a strong impact on alerting their readers to the radon issue. When 156 respondents were asked to name the most important environmental issue in the Lehigh Valley today, they most frequently volunteered radon. This answer was only surpassed by those who did not know of any environmental problem, with those not knowing comprising 19.2 percent of those responding, and those naming radon numbering 18.6 percent. Eight

other volunteered answers also were given, but only air pollution came close to radon's frequency, being named by 16 percent of the respondents.

Another indication of this public awareness about radon was the high percentage of people who said they had heard about the issue when questioned without any prompting. Out of 156 respondents, 78 percent said they had heard about radon. Another 12 percent noted they had heard of the issue after being read a short statement about radon's nature, bringing the total of those saying they were familiar with the issue to 140 people or 90 percent.

Of these 140 respondents, 61 percent indicated that newspapers were the prime source that alerted them to the radon problem. Fifty-nine percent stated they obtained further information about radon from newspapers. (Eight of the 140 respondents did not read newspapers regularly.)

In general, most appeared to be satisfied with radon coverage in their newspapers. On a five-point scale, with 5 being excellent, 72.3 percent of those responding (n=123) rated the quality of radon coverage a 3 or above. Asked about the quantity of radon coverage, 44 percent of those reading newspapers regularly (n=132) responded that there had been enough coverage. Thirty-five percent felt there had been too little coverage, while only 4 percent stated there had been too much. The remaining 17 percent said they could not make a judgment about the coverage.

One problem with the coverage, however, was indicated when those being interviewed were asked what they thought was the main problem caused by radon. Although a total of 39.3 percent (n=140) knew there were some health effects, only 5 percent could name the exact problem -- that of lung cancer. Twenty percent cited cancer, while 14.3 percent named only general health effects. The rest of the respondents provided an assortment of answers that showed little depth of knowledge about radon.

These data indicate that although the people surveyed had been made aware of the radon problem by their local newspapers, they did not appear to have much in-depth knowledge about it. However, it must be noted that because polls that rely on available subjects often do not adequately sample the total population, these results cannot be considered to represent the residents of the Lehigh Valley as a whole.

Conclusions

Based on the results of this study, one can conclude that during the nine months under review, the local newspapers played a vital role in alerting readers in the Lehigh Valley about the radon problem. However, while the large number of articles they published created an awareness of this issue, they did not appear to bring a clear understanding of its complexities to readers.

The large quantity of coverage showed that the newspapers paid continuing attention to the issue and wanted to keep their

readers up to date on it. They also served their readers well by not using alarming headlines and scaring them unnecessarily.

The majority of their stories were written by their own reporters, rather than taken from a wire service or syndicate, keeping the local angle high in the stories and making them particularly relevant for readers. Frequently small- and medium-sized newspapers depend on wire services to cover environmental stories and do not emphasize how such an environmental problem can directly affect readers. This was not the case with radon coverage in the Lehigh Valley.

The quality of this radon coverage appeared to satisfy local decision makers and citizens polled about the newspaper coverage. However, a number did want more stories or a different aspect covered, particularly more articles on the health effects.

This desire may be linked to the fact that citizens did not appear to clearly understand the health problems caused by radon. Only a few people questioned in the public opinion poll could cite lung cancer as the main problem it caused. The researchers believe this lack of understanding is due to the fact that, while direct health effects of radon were mentioned, the newspapers offered no in-depth explanations of radon's potential health problems. Event orientation, a limited number of scientific sources and the lack of scientific backgrounds in reporters and editors all contributed to this lack of explanation and consequent superficiality.

The local press coverage of radon related directly to the events that occurred during the course of the coverage. These

events included seminars, town meetings, the announcement of radon test results and political debates about who is responsible for funding further tests and correcting the problem. The local newspapers reported on these events but did not extend their coverage beyond them. In other words, the reporters and editors were reacting to news rather than initiating their own investigations.

Such event orientation discouraged both interpretive and investigative stories and hindered reporting on radon's scientific aspects. In addition, it highlighted and probably overemphasized the political aspects of the issue and the role of several local politicians.

Politicians and government officials dominated the coverage in all three local newspapers. Most of the news sources used were politically rather than scientifically oriented, opening the coverage up to possible manipulation to further government goals. The lack of scientific sources was probably partially responsible for the low level of scientific information provided to the public.

Crucial terms and concepts related to radon exposure levels were infrequently mentioned and rarely explained. For example, there was no differentiation between working levels and picocuries per liter, little discussion of what levels were dangerous to public health and no explanation of what corrective actions could be taken by area residents. This left readers to deal with a complex issue on their own without much help from their major source of information.

Some of the problems relating to lack of scientific information can be traced to the non-scientific backgrounds of the local reporters and editors. They may have been unable to understand and interpret complex radiation measurement jargon and then explain it to readers. This inability, coupled with the lack of agreement among scientific experts as to when radon levels become a health hazard, further hindered reporters' coverage. Consequently, readers could not clearly evaluate whether they were at serious risk.

Another problem for these local reporters was their lack of knowledge of independent scientific sources who could help them with their radon coverage. Very few went beyond Lehigh Valley scientific sources for their articles, even though there are many national experts who could have provided background information as well as explanations of the technical details. One resource they could have checked was the Media Resource Service operated by the Scientists' Institute for Public Information. This service has a computerized listing of 15,000 scientists to provide information to reporters on a multitude of topics and is free for any reporter to use.

Although the two metropolitan newspapers studied did have somewhat more scientific information and more independent experts quoted, their coverage was not much better than that of the local newspapers. In fact, they had far fewer articles than the local publications, indicating that these two newspapers did not have much of an interest -- at least at that time -- in the radon issue.

Covering environmental issues such as radon is not an easy task, particularly for small- and medium-sized newspapers. In this instance, the difficulty of dealing with radiation and its complex measurement jargon compounded the reporting problem. Interpretive reporting with in-depth explanations was called for, but such reporting requires time for research and careful writing, good knowledge of available sources and flexible deadlines.

Although such conditions probably could have been met at two of the three local newspapers, little interpretive reporting was done. There appears to be no clear explanation for this lack, but the researchers can only assume it was due to traditional journalistic constraints such as a hard news emphasis, tight deadlines and lack of space in the newspaper. Certainly the number of articles on radon published by the newspapers showed their interest in the subject.

As a consequence of this lack of interpretive reporting, readers probably were given the impression that the radon issue involved more political than scientific controversy. Even the political debate was not clearly delineated and it was difficult for readers to know whose advice to follow -- that coming from DER or that from EPA officials, for example. Scientific information on health effects and dosage rates, when presented, often was out of its research context and lacked important qualifications, thus confusing readers further.

Since these newspapers were and continue to be the major source of information about radon for most of their readers, they

should make every effort to provide more interpretive reporting and clarify various aspects of the radon issue. To aid in such coverage, reporters should be better trained to handle complex radiation measurement terms and encouraged to locate and use national scientific experts as sources more often. Alerting the public is not enough; these newspapers must strive to educate their readers about this complex issue so they "may understand what information should be sought and what policies should be implemented" (28).

# # #

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